

AI in Space Exploration

Artificial Intelligence · Practice Test · 18 Questions

1. Which NASA mission used the AEGIS (Autonomous Exploration for Gathering Increased Science) AI software to autonomously select rock targets for the Curiosity rover to analyze?

- A) Mars Science Laboratory
- B) Voyager 1
- C) Cassini
- D) Hubble Space Telescope

2. What is the primary function of the AI-driven 'AutoNav' system used on the Mars Perseverance rover?

- A) Regulating oxygen levels
- B) Autonomous path planning and hazard avoidance
- C) Interplanetary communication encryption
- D) Measuring atmospheric pressure

3. The Kepler Space Telescope utilized an AI algorithm based on neural networks to identify what specific feature in distant light curves?

- A) Dark matter
- B) Exoplanets
- C) Comet tails
- D) Solar flares

4. What is the name of the AI tool developed by NASA to identify potential impact craters on planetary surfaces from satellite imagery?

- A) CraterGAN
- B) DeepImpact
- C) MarsNet
- D) AstroMapping

5. In 2020, how did artificial intelligence assist researchers studying the 'Great Red Spot' on Jupiter?

- A) By physically steering the probe
- B) By predicting its shrinkage rate using historical data
- C) By generating fuel for the probe
- D) By mining its chemical composition

6. AI algorithms on the James Webb Space Telescope are used primarily for which process during data acquisition?

- A) Fuel combustion
- B) Targeting and precision pointing
- C) Translating alien languages
- D) Predicting solar eclipses

7. What role does AI play in the 'SETI' (Search for Extraterrestrial Intelligence) project regarding radio signals?

- A) Designing rocket thrusters
- B) Filtering terrestrial noise to detect potential technological patterns
- C) Building physical space antennae
- D) Calculating the mass of black holes

8. The 'Ionospheric Connection Explorer' (ICON) uses AI to study which complex relationship?

- A) The birth of stars
- B) The interaction between Earth's weather and space weather
- C) The orbit of Pluto
- D) The surface texture of Mercury

9. AI is used in the 'Mars Reconnaissance Orbiter' to perform which task efficiently?

- A) Compressing massive image files for transmission to Earth
- B) Growing plants in space
- C) Repairing solar panels
- D) Navigating to Venus

10. Which company partnered with NASA to use AI to discover a second planet in the Kepler-90 solar system, making it the first system known to have as many planets as our own?

- A) SpaceX
- B) Google
- C) Blue Origin
- D) Virgin Galactic

11. What specific data challenge does AI address for the 'Transiting Exoplanet Survey Satellite' (TESS)?

- A) Managing mission budgets
- B) Classifying millions of stars for potential transit events
- C) Cleaning the telescope lens
- D) Avoiding space debris

12. AI-based machine learning is currently used by NASA to predict what space-weather phenomenon that can damage satellites?

- A) Solar flares
- B) Lunar phases
- C) Asteroid rotation
- D) Meteorite impacts

13. What is the benefit of using AI 'on-board' processing for deep space probes like the Earth Observing-1?

- A) It eliminates the need for solar panels
- B) It allows for autonomous decision-making without waiting for ground control commands
- C) It creates new elements
- D) It powers the radio transmitter

14. AI models are used to map the 'Cosmic Web' by analyzing data from which type of space observations?

- A) Galaxy distributions and redshift surveys
- B) Deep-sea diving
- C) Seismic activity on Earth
- D) Radio waves from the Moon

15. How do researchers use AI to distinguish between asteroids and 'false positives' in data from the NEOWISE mission?

- A) By manually drawing pictures
- B) By using pattern recognition to identify moving objects against stationary stars
- C) By weighing the asteroids
- D) By measuring the temperature of the spacecraft

16. The AI system 'Virtual Meteor Observatory' uses computer vision to track what in the night sky?

- A) Space stations
- B) Meteors
- C) Satellites
- D) Planetary orbits

17. Which astronomical concept is assisted by AI by 'de-blurring' and enhancing images from ground-based telescopes affected by atmospheric turbulence?

- A) Adaptive optics
- B) Rocket propulsion
- C) Nuclear fusion
- D) Quantum entanglement

18. What does the AI program 'Planet Hunters' incentivize to confirm the discovery of exoplanets?

- A) Crowdsourced human analysis combined with machine learning verification
- B) The manual creation of star charts
- C) Sending robots to the planet
- D) Building larger telescopes